

## Appendix D - Infrastructure Cost Estimate

### INFRASTRUCTURE STUDY

Land Acquisition Cost Study, Phase I

Washington DC

*Don Todd Associates, Inc.*

**DTA Job No.: 90-001**

Estimate Type: Study

Date Prepared: 18-Mar-05

Job Size: 19 Acres

Div	Sub-Div	Description	Takeoff Quantity	Unit/Cost	Total Amount
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Infrastructure Study/costs for the proposed Baseball Stadium site. See attached report for Methodology and Assumptions.

#### 2 a Site Utilities

##### New Work Domestic Water

Trench excavation & backfill	862 cy	\$ 40.00	\$ 34,489
Install (N) 12" CI Steel pipe water line from S Capitol to 1st St. and up to N ST.	1,900 lf	90.00	171,000
Tap (E) water lines	3 ea	2,500	7,500
Dewatering	1,900	11.00	20,900
Connect to (E) water lines, Valves	3 ea	6,000.00	18,000
Test system	1 ls	4,000.00	4,000

##### New Work Fire Water

Trench excavation & backfill	1,724 cy	40.00	68,978
Install (N) 8" CI Steel pipe Fire line	3,760 lf	80.00	300,800
Install (N) Fire Hydrants	12 ea	2,400.00	28,800
Install 6" Gate Valve	12 ea	2,000.00	24,000
Backflow Preventers, Vaults & Pits	1 ls	150,000	150,000
Dewatering	3,760	11.00	41,360
Connect to (E) lines	4 ea	2,500.00	10,000
Test system	1 ls	6,000.00	6,000

##### Inspection & Connection Fees for Water Service

Inspection fees	1 lot		60,000
Connection fees	1 lot		30,000

##### Gas Service Distribution (WGC)

Relocate HP line in 1st Street from west side to east side			
Install (N) 8" WRPD (Excavation & Backfill Included)	890 lf	180.00	160,200
Connect to (E) lines	3 ea	2,000.00	6,000
Relocate LP line in N Street from South side to north side			
Install (N) 4" CILP (Excavation & backfill Included)	800 lf	130.00	104,000
Connect to (E) lines	8 ea	1,200.00	9,600
Dewatering	1,690	11.00	18,590
Pretax Carring charge	29.77%		88,831
Other charges			
Pressure improvements cost	1 lot		50,000

##### New Storm Drainage

Relocate with new storm drain the 15" & 18" line located in "O" Street			
Excavation & backfill	361 cy	40.00	14,440
Dewatering	1,220 ft	11.00	13,420
Install (N) 18" storm drain from S. Capital St. to 1st st.	1220 ft	60.00	73,200
Connect to (E) 60" sewer line	1 ea	1,500	1,500
Catch Basin	6 EA	2,500	15,000

Subtotal Direct Cost **\$ 1,530,607**

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General Contractor's Gen. Conditions, Overhead & Profit	17%	260,203
Design/Estimating Contingency	25%	447,703
Escalation to Mid point of Construction	10%	223,851
Soft Costs	30%	738,709
<b>TOTAL PROBABLE COST - Water/Gas/Drainage</b>		<b>\$ 3,201,074</b>
Cost Allowance provided by <u>Pepco</u>		10,000,000
Cost Allowance provided by <u>Comcast</u>		250,000
Cost Allowance provided by <u>Verizon</u>		1,500,000
<b>TOTAL PROBABLE SITE UTILITIES COST</b>		<b>\$ 14,951,074</b>

### 2 b RELOCATE TUNNEL/SANITARY SEWER LINES

#### Relocate Tunnel

Sanitary Sewer Lines

Relocate Tunnel Diameter 11' - 6" length of tunnel +/- 2000 lf

This estimate assumes that the tunnel will be relocated to an area where the excavated material will have some rock or large boulders, this is normal when the site is near a river.

Sink North shaft Approx 80 feet deep	1 lot	\$ 945,000	\$ 945,000
Excavate & Support	1.00 lot	687,000	687,000
TBM & Plant erection	1.00 lot	582,000	582,000
Excavate TBM Tunnel	2,000.00 lf	1,620.00	3,240,000
Preexcavation grouting	1.00 lot	458,000	458,000
Remove TBM & trailing gear from tunnel	1.00 lot	285,000	285,000
Equipment depreciation	1.00 lot	1,460,000	1,460,000
Install & Backfill Lining	2,000.00 lf	980.00	1,960,000
Sink south shaft	1.00 lot	645,000	645,000
Install steel lining & Backfill shafts	1 lot	785,000	785,000
Indirect costs, Field supervision, Maintenance & services,	1 lot	1,968,000	1,968,000
Adandon (E) tunnel	1100 ft	150.00	165,000
Dewatering	1 lot	875,000	875,000
Inspection fees based on 280 days	1 lot	140,000	140,000
Subtotal Direct Cost			<b>\$ 14,195,000</b>
General Contractor's Gen. Conditions, Overhead & Profit	17%		2,413,150
Design/Estimating Contingency	25%		4,152,038
Escalation to Mid point of Construction	5%		1,038,009
Soft Costs	30%		6,539,459
<b>TOTAL PROBABLE COST FOR TUNNEL RELOCATION</b>			<b>\$ 28,337,656</b>

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#### Relocate Sanitary Sewer Lines

Relocate 48" Sewer line length of pipe be lowerd by 8 feet at the corner of First Street & O Street for a distance of +/- 1000 lf

Remove & plug (E) Sanitary Lines	2 lot	\$ 5,000	\$ 10,000
Install 48" sewer lines	1,000 ft	210.00	210,000
Dewatering	1,000 ft	35.00	35,000
Excavation & backfill	4,860 cy	40.00	194,400
Adandon (E) sewer line	1,000 ft	50.00	50,000
Inspection fees Base on 25 days	1 lot	12,500	12,500
Manhole	2 ea	20,000	40,000

Subtotal Direct Cost **\$ 551,900**

General Contractor's Gen. Conditions, Overhead & Profit 17% 93,823

Design/Estimating Contingency 25% 161,431

Escalation to Mid point of Construction 5% 40,358

Soft Costs 30% 254,253

**TOTAL PROBABLE COST SEWER LINE RELOCATION 1,101,765**

**TOTAL PROBABLE COST FOR RELOCATION OF TUNNEL & SANITARY SEWER \$ 29,439,421**

### 2 c ROADS & STREETS IMPROVEMENTS

#### 1st St SE Improvements (Between Potomac Avenue & M St):

	1,380 lf		
Demolition	41,400 sf	\$ 2.00	\$ 82,800
Clearing & Grubbing, Allow	1 ls	10,000	10,000
Roadway Excavation & Backfill, Allow	500 cy	45.00	22,500
Sidewalk incl. Base Course	70,380 sf	10.20	717,876
Handicap Ramps	15 ea	1,000	15,000
Drainage	1,380 lf	150.00	207,000
Curb & Gutter - Granite with brick gutter	2,760 lf	80.00	220,800
Erosion Control	2,760 lf	10.00	27,600
Milling of Existing Pavement	81,420 sf	0.55	44,781
Pavement Overlay, 2" thick	1,005 ton	95.00	95,493
Additional Pavement at Intersection	1 ls	10,000	10,000
Landscaping - Trees @ 30' o.c.	92 ea	1,200	110,400
Ground Covers & Spreading	1 lot	20,000	20,000
Miscellaneous Repair	1 lot	15,000	15,000
Erosion Control	2,760 lf	10.00	27,600
Street Lighting @ 50' o.c. per side ( Decorative)	55 ea	15,000	828,000
Traffic Signals	1 ea	100,000	100,000
Striping	2,760 lf	1.00	2,760

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Traffic Signs	1 ls	10,000	10,000
Traffic Controls	1 ls	50,000	50,000
Utilities	1 ls	100,000	100,000
Subtotal Direct Cost			<b>\$ 2,717,610</b>
General Contractor's Gen. Coditions, Overhead & Profit	17%		461,994
Design/Estimating Contingency	25%		794,901
Escalation to Mid point of Construction	10%		397,450
Soft Costs	30%		1,311,586
<b>TOTAL PROBABLE COST - 1ST STREET SE</b>			<b>\$ 5,683,541</b>

#### N Street SE Improvements:

843 lf			
Demolition	8,000 sf	\$ 2.00	\$ 16,000
Clearing & Grubbing, Allow	1 LS	10,000	10,000
Roadway Excavation & Backfill, Allow	360 cy	45.00	16,200
Sidewalk incl. Base Course	35,406 sf	10.20	361,141
Handicap Ramps	10 ea	1,000	10,000
Drainage	843 lf	150.00	126,450
Curb & Gutter - Granite with brick gutter	1,686 lf	80.00	134,880
Erosion Control	1,660 lf	10.00	16,600
Milling of Existing Pavement	26,973 sf	0.55	14,835
Pavement Overlay, 2" thick	248 ton	95.00	23,560
Additional Pavement at Intersection	1 ls	7,500	7,500
Landscaping - Trees @ 30' o.c.	55 ea	1,200	66,000
Ground Covers & Spreading	1 lot	10,000	10,000
Miscellaneous Repair	1 lot	10,000	10,000
Erosion Control	1,686 lf	10.00	16,860
Street Lighting @ 50' o.c. per side ( Decorative)	34 ea	15,000	505,800
Traffic Signals	- ea	100,000	-
Striping	3,320 lf	1.00	3,320
Traffic Signs	1 ls	5,000	5,000
Traffic Controls	1 ls	15,000	15,000
Utilities	1 ls	75,000	75,000
Subtotal Direct Cost			<b>\$ 1,444,146</b>
General Contractor's Gen. Coditions, Overhead & Profit	17%		245,505
Design/Estimating Contingency	25%		422,413
Escalation to Mid point of Construction	10%		211,206
Soft Costs	30%		696,981
<b>TOTAL PROBABLE COST - 'N' STREET SE</b>			<b>\$ 3,020,252</b>

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**Potomac Avenue SE Improvements:**

	900 lf			
Demolition	4,500 sf	\$ 2.00	\$	9,000
Clearing & Grubbing, Allow	1 ls	10,000		10,000
Roadway Excavation & Backfill, Allow	400 cy	45.00		18,000
Sidewalk incl. Base Course	37,800 sf	10.20		385,560
Handicap Ramps	7 ea	1,000		7,000
Drainage	900 lf	150.00		135,000
Curb & Gutter - Granite with brick gutter	1,800 lf	80.00		144,000
Erosion Control	1,800 lf	10.00		18,000
Milling of Existing Pavement	28,800 sf	0.55		15,840
Pavement Overlay, 2" thick	356 ton	95.00		33,778
Additional Pavement at Intersection	1 ls	5,000		5,000
Landscaping - Trees @ 30' o.c.	60 ea	1,200		72,000
Ground Covers & Spreading	1 lot	10,000		10,000
Miscellaneous Repair	1 lot	10,000		10,000
Erosion Control	1,800 lf	10.00		18,000
Street Lighting @ 50' o.c. per side ( Decorative)	36 ea	15,000		540,000
Traffic Signals	- ea	100,000		-
Striping	3,600 lf	1.00		3,600
Traffic Signs	1 ls	5,000		5,000
Traffic Controls	1 ls	30,000		30,000
Utilities	1 ls	75,000		75,000
Subtotal Direct Cost			\$	1,544,778
General Contractor's Gen. Conditions, Overhead & Profit	17%			262,612
Design/Estimating Contingency	25%			451,848
Escalation to Mid point of Construction	10%			225,924
Soft Costs	30%			745,548

**TOTAL PROBABLE COST - POTOMAC AVE. SW \$ 3,230,710**

**TOTAL PROBABLE COST- ROAD IMPROVEMENTS \$ 11,934,502**

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- 2 d Improvements to Navy Yard Metro Rail Station ( Per Metro Recommendations-Option 2)**  
**Provide four ADA elevators ( 2 per level), enlarge station & mezzanine area, add new escalators, add new kiosk/fare collection equipment at Mezzanine Area.**

Demolition of Wall for New Opening	2,500	cf	\$	250.00	\$	625,000
Shoring/Protection	1	ls		50,000		50,000
Excavation	3,000	cy		25.00		75,000
Backfill	825	cy		35.00		28,875
Disposal of Excess Excavation	2,175	cy		20.00		43,500
Sheeting	6,000	sf		25.00		150,000
Dewatering	1	ls		10,000		10,000
Exterior Walls, 2.5' thick	600	cy		250.00		150,000
	Rebars @ 250#/cy	150,000	lb	1.50		225,000
	Formworks	12,000	sf	20.00		240,000
Concreting, Elevated Slabs, 3' thick	120	cy		300.00		36,000
	Rebars @ 250#/cy	30,000	lb	1.50		45,000
	Formworks	1,080	sf	25.00		27,000
Concreting, Slab on Grade, 3' thick	120	cy		250.00		30,000
	Rebars @ 200#/cy	24,000	lb	1.50		36,000
	Formworks - Edge	350	sf	20.00		7,000
Waterproofing	6,000	sf		15.00		90,000
Interior Walls	-	cy		1,100		-
Connection & Modifications Vault	-	ea		50,000		-
Rooms Partition & Doors & Furnishings	-	ls		25,000		-
Wall Mounted Rails	110	lf		75.00		8,250
Stair Floor Mounted Guardrail	-	lf		150.00		-
Main Entrance Canopy	3,500	sf		100.00		350,000
Miscellaneous Metals	1	ls		25,000		25,000
Finishings, Ceiling	800	sf		50.00		40,000
Finishings, Floor	800	sf		35.00		28,000
Elevators, ADA including Structural	2	ea		400,000		800,000
Faregate/Vending Equipment	1	ls		300,000		300,000
Kiosk, complete	1	ls		200,000		200,000
Station Furniture & Graphics	1	ls		10,000		10,000
HVAC	800	sf		120.00		96,000
Electrical	800	sf		220.00		176,000
Electrical Connections	2	ls		50,000		100,000
Security, Comm, Specialties	800	sf		100.00		80,000
Electrical & Comm system integration	1	ls		50,000		50,000
Safety & Labor Inefficiency	25%	ls		675,000		168,750
<b>Mezzanine Addition:</b>						
New Mezzanine to Existing Station	2,700	sf		1,000		2,700,000

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		Cut out at existing mezzanine and platform for elevators	1 ls	50,000	50,000
		Elevator, ADA platform to mezz., 2 stops	2 ea	300,000	600,000
		Escalators	1 ea	660,000	660,000
		Stair & escalator well	1 ea	200,000	200,000
		Finishings	2,700 sf	85.00	229,500
		Station Furniture & Graphics	2,700 sf	10.00	27,000
		HVAC	2,700 sf	85.00	229,500
		Electrical	2,700 sf	90.00	243,000
		Security, Comm, Specialties	2,700 sf	75.00	202,500
		System Integrations	2,700 sf	20.00	54,000
		Railroad Insurance	1 ls	150,000	150,000
		Cost impact to Labor Inefficiency	20%	2,700,000	540,000
		Subtotal Direct Cost			<b>\$ 10,185,875</b>
		General Contractor's Gen. Conditions, Overhead & Profit	17%		1,731,599
		Design/Estimating Contingency	20%		2,383,495
		Escalation to Mid point of Construction	7%		1,001,068
		Soft Costs	30%		4,590,611
		<b>TOTAL PROBABLE COST - (OPTION 2) NAVY YARD METRO RAIL IMPROV COST</b>			<b>\$ 19,892,647</b>